
METHOD OF DETERMINING ASPHALT CONTENT IN ASPHALTIC CONCRETE MIXTURES BY CALCULATION

SCOPE

The percent of asphalt in asphaltic concrete mixtures can be determined by calculation using test results from [I.M. 350](#), "Maximum Specific Gravity of Asphalt Paving Mixtures" and [I.M. 369](#), "Asphalt Cement Specific Gravity Determination."

PROCEDURE

A. Formula No. 1:

$$\text{Effective Sp. Gr. of Aggregate } (G_{SE}) = \frac{100 - P_b}{\frac{100}{G_{mm}} - \frac{P_b}{G_b}}$$

* Asph. Sp. Gr. (G_b) at 25°C/25°C (77°F/77°F)

Throughout the first day of production, obtain at least 3 samples of asphaltic concrete, which will represent that day's production. Perform the maximum specific gravities on each of these samples and determine the average. The asphalt contents (P_b) may be obtained by measurements from tank stick or meter. The specific gravity of the asphalt cement may be obtained from the certification document or by test using [I.M. 369](#) "Asphalt Cement Specific Gravity Determination".

B. After the G_{SE} has been determined it is used throughout the project to calculate the asphalt content of the mixture. If any proportions are changed the G_{SE} must be redetermined.

Formula No. 2:

$$P_b = (100) \frac{(G_{se})(G_b) - (G_{mm})(G_b)}{(G_{se})(G_{mm}) - (G_{mm})(G_b)}$$

REPORTING

The calculated asphalt content is reported to 3 significant figures.

EXAMPLE CALCULATIONS

$$G_{SE} = \frac{100 - P_b}{\frac{100}{G_{mm}} - \frac{P_b}{G_b}}$$

Given:

$$P_b = 5.75$$

$$G_b = 1.021$$

$$G_{mm} = 2.451$$

$$G_{SE} = \frac{100 - 5.75}{\frac{100}{2.45} - \frac{5.75}{1.021}} = \frac{94.25}{40.80 - 5.63}$$

$$G_{SE} = \frac{94.25}{35.17} = 2.680 \text{ Eff. Sp. Gr.}$$

$$P_b = (100) \frac{(G_{se})(G_b) - (G_{mm})(G_b)}{(G_{se})(G_{mm}) - (G_{mm})(G_b)}$$

Given:

$$G_{SE} = 2.680$$

$$G_b = 1.021$$

$$G_{mm} = 2.451$$

$$(100) \frac{(2.680)(1.021) - (2.451)(1.021)}{(2.680)(2.451) - (2.451)(1.021)} = 5.75 \% \text{ Asph.}$$